PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Application No. 09/987,372

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) A radiation image readout apparatus, comprising:

an illuminating means for illuminating with an excitation light in a line form a portion of the surface of a stimulable phosphor sheet on which a radiation image has been stored,

a focusing optical system provided with a focusing lens for focusing the simulated emission emitted from a portion of the stimulable phosphor sheet upon the illumination thereof by the excitation light emitted from the illuminating means in a line form and a detecting means provided with a line sensor, which is formed of a plurality of photoelectric converting elements arranged in a straight line and at a uniform pitch, for receiving and photoelectrically converting a stimulated emission focused by the focusing optical system,

a scanning means for moving the illuminating means the detecting means relatively from one end of the stimulable phosphor sheet to another in a direction different from that of the lengthwise direction of the illuminated portions, wherein

the MTF of the focusing optical system is 50% or less [[of]] at the Nyquist frequency determined by the aforementioned uniform pitch.

2. (Currently amended) A radiation image readout apparatus as defined in claim 1, wherein

the MTF of the focusing optical system is 20% or less [[of]] at the Nyquist frequency determined by the aforementioned uniform pitch.

3. (Currently amended) A radiation image readout apparatus, comprising

an illuminating means for illuminating with an excitation light in a line form a portion of the surface of a stimulable phosphor sheet on which a radiation image has been stored,

a focusing optical system provided with a focusing lens for focusing the stimulated emission emitted from a portion of the stimulable phosphor sheet upon the illumination thereof by the excitation light emitted from the illuminating means in a line form and a detecting means provided with a line sensor, which is formed of a plurality of photoelectric converting elements arranged in a straight line and at a uniform pitch, for receiving and photoelectrically converting a stimulated emission focused by the focusing optical system,

a scanning means for moving the illuminating means and the detecting means relatively from one end of the stimulable phosphor sheet to another in a direction differing from that of the lengthwise direction of the illuminated portions, and

a readout means for reading out the output of the line sensor in the order corresponding to the movement thereof, and obtaining the data forming the final image, wherein

said uniform pitch is less than the width of the pixels of the final image, further comprising

a pixel-density converting filter for converting the image signal of the pixel density outputted form the line sensor based on said uniform pitch to the pixel density of the final image, wherein

the frequency characteristic of the pixel-density converting filter is 50% or less [[of]] at the Nyquist frequency determined by the pixel density of the final image.

4. (Currently amended) A radiation image readout apparatus as defined in claim 3, wherein

the frequency characteristic of the pixel-density converting filter is 20% or less [[of]] at the Nyquist frequency determined by the pixel density of the final image.

5. (Currently amended) A radiation image readout apparatus as defined in either of claims 1 or 3, wherein

the width of the interval of the direction in which the portions of the stimulable phosphor sheet that have been illuminated with the excitation light in a line form are relatively moved is narrower than the width of the pixels of the final image, further comprising

a second pixel-density converting filter is provided for converting the pixel density based on the width of the interval in the direction in which the image signal output by the line sensor is relatively moved to the pixel density of the final image, wherein

the frequency characteristic of the second pixel-density converting filter is 50% or less [[of]] at the Nyquist frequency determined by the pixel density of the final image.

6. (Currently amended) A radiation image readout apparatus as defined in claim 5, wherein

the frequency characteristic of the second pixel-density converting filter can be caused to be 20% or less [[of]] at the Nyquist frequency determined by the pixel density of the final image.

7. (New) A radiation image readout apparatus, comprising:

illumination means comprising an excitation light for exciting a radiation image which has been stored in a stimulable medium;

focusing means for focusing a stimulated emission from said stimulable medium;

detection means for detecting radiation image emissions comprising photoelectric conversion elements arranged at a known regularity; and

scanning means for moving: i) said stimulable medium relative to said illumination means and said detection means, or ii) said illumination means and said detection means relative to said stimulable medium; wherein

an MTF of the focusing means is 50% or less at a Nyquist frequency derived from said known regularity of said photoelectric conversion elements.

8. (New) The radiation image readout apparatus of claim 7, further wherein the MTF of the focusing means is 20% or less at said Nyquist frequency.

9. (New) The radiation image readout apparatus of claim 7, further comprising pixel-density conversion means for converting an image signal of the pixel density output from the detection means to a pixel density of a final image.

10. (New) The radiation image readout apparatus of claim 7, further wherein said known regularity is less than the width of the pixels of a final image.

11. (New) The radiation image readout apparatus of claim 9, further wherein the frequency characteristic of the pixel-density conversion means is 50% or less at a Nyquist frequency determined by a pixel density of a final image.

12. (New) The radiation image readout apparatus of claim 9, further wherein the frequency characteristic of the pixel-density conversion means is 20% or less at a Nyquist frequency determined by a pixel density of a final image.

13. (New) The radiation image readout apparatus of claim 7, further wherein:

a width of the interval of the direction in which portions of said stimulable medium that have been illuminated with said excitation light are relatively moved is narrower than the width of the pixels of a final image; and further comprising

pixel-density converting means for converting the pixel density of the width of the interval of the direction in which portions of said stimulable medium that have been illuminated with said excitation light are relatively moved to the pixel density of a final image; wherein

the frequency characteristic of the pixel-density converting means is 50% or less at a Nyquist frequency determined by a pixel density of a final image.

14. (New) The radiation image readout apparatus of claim 13, wherein the frequency characteristic of the pixel-density converting means is 20% or less at the Nyquist frequency determined by the pixel density of the final image.